

REMARKS

At the time of the Office Action dated September 16, 2003, claims 1-15, 24-43 and 46-49 were pending and rejected in this application. Claims 1, 4, 24, 27, 40, 42 and 46-49 have been amended, claims 3, 5-10, 13-15, 26, 28-33, 36-38, 41 and 43 have been cancelled, and claims 50-53 have been added. The amendments to independent claims 1, 24, 40 and 42 find support in the specification on pages 80 through 87. New claims 50-53 are directed to embodiments 10 through 13, described in the specification on pages 69 through 77. Applicants submit that the present Amendment does not generate any new matter issue.

Claims 1, 2, 4, 14, 15, 24, 25, 27, and 37-39 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi, JP 11-014800, in view of Bearden et al. (hereinafter Bearden)

On page two and three of the Office Action, the Examiner admitted that Itabashi does not teach using a material having an absorption edge only in a wavelength region other than 0.4 nm through 0.7 nm. The Examiner then referred to paragraph [0011] of Itabashi as teaching the use of "ruthenium in another embodiment." The Examiner also asserted that Bearden establishes that ruthenium has an absorption edge only in a wavelength region other than 0.4 nm though 0.7 nm.

On pages twelve through fourteen in the Amendment dated July 28, 2003, Applicants presented extensive arguments as to why the combination of Itabashi in view of Bearden (i.e., the same references used in the present rejection) fail to teach or suggest the claimed invention. In

responding to these arguments, the Examiner stated the following on page 10 of the Office

Action:

17. Applicant's arguments with respect to claims 1-18, 20-43, and 46-49 have been considered but are moot in view of the new ground(s) of rejection.

Since the Examiner has rejected these claims based upon the same combination of references (i.e., Itabashi in view of Bearden), Applicants are unclear as to what constitutes "new ground(s) of rejection," so as to render Applicants' arguments moot. In this regard, the Examiner is referred to M.P.E.P. § 707.07(f), which states that "the Examiner, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."

On page two of the Office Action, the Examiner stated:

2. With regards to claims 1 and 24, Itabashi discloses an x-ray exposure apparatus and method (Paragraph [0001]) comprising: an incidence step to an x-ray mirror and providing light having a component and peak in wavelength ranging from 0.45 nm through 0.7 nm (paragraph [0012]), wherein a material of high reflectance is disposed at an outer most surface of the x-ray mirror (Abstract), and an oblique angle of the x-ray with respect to the x-ray mirror is in the range of 1.5° thereby providing the light at least having a component in wavelength [sic] ranging from 0.45 nm through 0.7 nm (Fig. 2a).

Itabashi further teaches a material such as ruthenium.

Applicants respectfully submit that the Examiner has misinterpreted the teachings of Itabashi. The Abstract does not teach "a material of high reflectance on an outermost surface of the x-ray mirror." Instead, Itabashi advocates the exact opposite, which is to have a material of low reflectance. As stated in the Abstract, "[e]limination of the uneven condition requires lowering the reflectance of reflection point 13a."

Furthermore, paragraph [0011] of Itabashi does not suggest that ruthenium can be used "in another embodiment." Instead, paragraph [0011] only compares the reflectivity of heavier

elements, such as Pt, W, Ta, U, Pd, and Ru with lighter elements, such as C, Si, and Al, and states that the reflectivity of heavier elements is greater than the reflectivity of light elements.

Itabashi then teaches the use of Pt and SiC (i.e., the lighter elements) to form a x-ray mirror.

Therefore, in contrast to the assertions made by the Examiner, Itabashi does not suggest the use of ruthenium.

Applicants also note the Examiner's comments in the first full paragraph on page three of the Office Action, which are reproduced below:

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have ruthenium with the device and method of Itabashi, since it would be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. One would be motivated to use this metal for the high reflection factor compared to light matter (paragraph [0011]) as implied by Itabashi.

Notwithstanding this assertion, the Examiner has failed to establish any factual basis to support a finding that selecting ruthenium was a known material suitable for use with an X-ray mirror. As stated above, Itabashi did not advocate using ruthenium. Instead, ruthenium was mentioned by Itabashi for comparison purposes only. Furthermore, Itabashi did not imply using a metal with a high-reflection factor. Instead, Itabashi advocated the complete opposite (i.e., using an element with a low-reflection factor).

Independent claims 1 and 24 have also been amended to further distinguish the claimed invention over the applied prior art. Specifically, claims 1 and 24 have been amended to recite that a first X-ray mirror collects outgoing X-rays and a second X-ray mirror increases an area of a region illuminable by X-rays outgoing from the X-ray mirrors. These features are neither taught nor suggested by the applied prior art. Therefore, Applicants respectfully submit that one having ordinary skill in the art would not have arrived at the claimed invention based upon the

combination of Itabashi and Bearden. Thus, Applicants respectfully request withdrawal of the imposed rejection of claims 1-2, 4, 24-25 and 27 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Bearden.

Claims 3 and 26 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Uzawa et al., U.S. Patent No. 5,524,131 (hereinafter Uzawa)

Claims 3 and 26 have been cancelled. Thus, the rejection of these claims is moot.

Claims 5, 7, 28 and 30 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Oshino, U.S. Patent No. 5,677,939

Claims 5, 7, 28 and 30 have been cancelled. Thus, the rejection of these claims is moot.

Claims 6, 8, 29 and 31 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Sumiya, JP 3-120714

Claims 6, 8, 29 and 31 have been cancelled. Thus, the rejection of these claims is moot.

Claims 9-10 and 32-33 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Haisma et al., U.S. Patent No. 5,622,525 (hereinafter Haisma)

Claims 9-10 and 32-33 have been cancelled. Thus, the rejection of these claims is moot.

Claims 13, 36 and 40-43 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Watanabe, JP 10-083955

On pages seven and eight of the Office Action, the Examiner asserted that the combination of Itabashi, Bearden and Watanabe disclose the invention as claimed. This rejection is respectfully traversed.

Claims 13, 36, 41 and 43 have been cancelled. Thus, the rejection of these claims is moot. Independent claims 40 and 42 include similar limitations to those presented in claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Watanabe does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 40 and 42 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Watanabe is not viable and, hence, solicit withdrawal thereof.

Claims 11, 12, 34 and 35 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of Bearden and Rostoker et al., U.S. Patent No. 5,375,974 (hereinafter Rostoker)

On pages eight and nine of the Office Action, the Examiner asserted that the combination of Itabashi, Bearden and Rostoker disclose the invention as claimed. This rejection is respectfully traversed.

Claims 11 and 12, and claims 34 and 35, respectively, depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Rostoker does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 11-12 and 34-35 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Rostoker is not viable and, hence, solicit withdrawal thereof.

Claims 46-49 are rejected under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of Bearden, and further in view of Hasegawa, et al., U.S. Patent No. 6,219,400 (hereinafter Hasegawa)

On pages nine and ten of the Office Action, the Examiner asserted that the combination of Itabashi, Bearden and Hasegawa disclose the invention as claimed. This rejection is respectfully traversed.

Claims 46 and 47, and claims 48 and 49, respectively, depend from claims 1 and 24, and Applicants incorporate herein the arguments previously presented in overcoming the rejection of claims 1 and 24 under 35 U.S.C. § 103 for obviousness based upon Itabashi in view of the Bearden. The Examiner's tertiary reference of Hasegawa does not overcome the asserted deficiencies of Itabashi and Bearden. Applicants, therefore, respectfully submit that the imposed rejection of claims 46-49 under 35 U.S.C. § 103 for obviousness predicated upon Itabashi in view of the Bearden and Hasegawa is not viable and, hence, solicit withdrawal thereof.

New claims 50-53 are not taught or suggested by the applied prior art, since none of the applied references, either alone or in combination teach or suggest two or more X-ray mirrors that satisfy the equation $D = L \times \tan(2\alpha)$, as recited in claims 50-52, or the equation $D = 2 \times L\alpha \times \tan(2\alpha) = L\beta \times \tan(\beta - \alpha)$, as recited in claim 53.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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